ATTACHMENT C
ROC Liberty PMA Final Report

Final Report on the Audit of

Qwest's Performance Measures

Presented to:

The Regional Oversight Committee

By:

THE
LIBERTY
CONSULTING
GROUP

65 Main Street, P.O. Box 237
Quentin, Pennsylvania 17083
(717) 270-4500 (voice)
(717) 270-0555 (facsimile)
Admin@LibertyConsultingGroup.com (e-mail)

September 25, 2001

Table of Contents

I. Introduction

A. Objectives of the Performance Measures Audit *(PMA)*

The Regional Oversight Committee *(ROC)*, which is composed of thirteen of the fourteen states served by Qwest, retained The Liberty Consulting Group *(Liberty)* to conduct an audit of the measures used to evaluate Qwest's wholesale performance. The objectives of the audit were to:

- validate that Qwest's measurement of performance is in the manner prescribed by the Performance Indicator Definition *(PID)* and is reliable,

- compare and assess retail and wholesale operations processes in areas material to serving CLECs, and

- verify that, where required, comparable wholesale and retail processes will by nature of their design and operation provide service at parity.

The main focus of the PMA was to determine whether there were reasonable assurances that the performance as measured and reported by Qwest was equivalent to the performance that Qwest actually delivered. To accomplish this, the audit work took three principal forms:

- Examining Qwest's processes for collecting and processing data, in order to determine whether Qwest can and does appropriately capture, process, and report performance information against the standards and measures that have been defined.

- Conducting an end-to-end analysis of sample data sets to verify the complete and accurate functioning of the data capture, security, processing, analysis, and reporting processes audited.

- Performing an independent calculation of performance measures to corroborate the adequacy of the processes that measure performance against explicit standards and measures.

This report summarizes the results of the PMA.

B. Conduct of the Audit

Prior to the start of the PMA, the stakeholders in the Qwest region generally reached a consensus about how to measure the adequacy of Qwest's service to CLECs, what role comparative and absolute measures should play in those measurements, and what detailed measures would be used to evaluate Qwest's fulfillment of its obligations to make its network available to CLECs. This consensus was documented in the Performance Indicator Definitions, or PID report. The PMA did not include an examination of the propriety of the measurements required by the PID. It took them as a given, recognizing that any process for changing them was a matter for the larger group that worked to develop them. However, the audit work did include an assessment of whether all requirements of the PID were objectively stated and not subject to multiple interpretations.

The PMA began one year ago. Early audit work included the establishment of audit protocols that provided for the efficient and timely flow of information from Qwest to Liberty, the identification of the owners and experts for systems material to performance measurement, and the gaining of an understanding of the architecture and operation of the legacy and special systems involved in performance measurement and reporting. Liberty then developed a detailed audit plan that was approved by the ROC, and available in summary form to Qwest and other stakeholders.

To conduct the three parts of the audit (*i.e.*, process, data tracking, and recalculation) of each performance measure, Liberty acquired information from and conducted work sessions with Qwest's personnel. In total there were about 600 requests for information and over 175 interviews and work sessions. Liberty also acquired information from CLECs and the staffs of ROC state commissions relative to areas they were particularly concerned with or that they thought required specific attention during the audit. As Liberty completed the audit of particular performance measures, it issued a "Release Report" that summarized the audit findings for that measure. The bulk of this report is a compilation of those individual release reports.

Liberty identified problems or concerns associated with performance measures in the form of Exception Reports and Observation Reports in accordance with procedures established for the entire OSS test. Liberty issued 25 observations and 44 exceptions during the course of the PMA. Liberty reported on the resolution of these issues in the release reports for the affected performance measures.

The Master Test Plan for OSS testing identified several of the performance measures as being required to validate test results. The ROC decided that the PMA should be complete for those measures before the beginning of the OSS test. Liberty issued its release report for the last of the testing-required measures on April 7, 2001. Since that date, Liberty continued the PMA for the remaining non-test-required performance measures and for some changes made to test-required measures.

In addition to the review of individual performance measures, an element of Liberty's work scope was to develop recommendations for an ongoing monitoring program, as it concerns the accuracy, reliability, and completeness of performance reporting by Qwest. Associated with the monitoring recommendations, Liberty's audit included an assessment of Qwest's change management process as it related to performance measuring and reporting.

C. Summary Conclusions and Recommendations

Despite the fact that the ROC and its Technical Advisory Group *(TAG)* had approved an extensive definition of the required performance measures prior to beginning the audit, the results of the PMA showed that in a significant number of cases, Qwest was not meeting or could not meet those definitions exactly, or that the PID language needed to be more precise. Thus, as a result of the PMA, a significant number of changes occurred to Qwest's measurement and reporting processes and to the PID itself. In addition, when the audit started there were several measures for which Qwest either did not have a method established for collecting and reporting performance, or for which Qwest used a relatively cumbersome and error-prone manual method. Liberty has now concluded that the audited performance measures accurately and reliably report

actual Qwest performance. Therefore, the PMA resulted in significant improvements to both the processes used by Qwest and the specificity and clarity of the PID.

There is a recognized need for an on-going program for monitoring the reliability and accuracy of Qwest's performance reporting. This need is heightened because the methods for reporting some measures have only recently been developed by Qwest and because of the number of changes that Qwest made during the PMA. Liberty also found that Qwest has a reasonable process in place to track and control changes in the processes used to report performance. However, that process needs to be more formally documented and visible to stakeholders of Qwest's wholesale performance.

The following sections of this report include recommendations associated with individual performance measures. These recommendations generally fall into the following categories:

- There were cases in which Liberty became aware that Qwest intended to make changes to the process (*e.g.*, automate a process that was being done manually) or systems used to collect and process the information required to report results. In those cases, Liberty recommended that future auditing or checking of modified processes be undertaken.

- There were cases in which Liberty found that Qwest was accurately reporting results, but that there was room for improvement in the internal documentation associated with certain performance measures. In those cases, Liberty recommended that the documentation be improved.

- Some of Qwest's processes were relatively new when Liberty issued the associated release report, and some of these processes had difficulties in the development stages. In these cases, Liberty recommended some checking of results such as independent recalculations.

- The accuracy of many of the performance measures rely on the accuracy of field-entered data. Related to several of the maintenance and repair performance measures, Liberty recommended that Qwest develop an audit process to ensure the accuracy of trouble reports.

D.   Organization of This Report

The following sections of this report provide the results of Liberty's audit of the various performance measures. Those sections are organized in the same order as the PID, more specifically:

II.   GA – Electronic Gateway Availability

III.   PO – Pre-Order/Order

IV.   OP – Ordering and Provisioning

V.   MR – Maintenance and Repair

VI.   BI – Billing

VII.   DB – Database Updates

VIII.   DA – Directory Assistance, and OS – Operator Services

IX.   NI and NP – Network Performance

X.   CP – Collocation.

Section XI. below provides the Liberty's recommendations for an on-going monitoring program and its assessment of Qwest's change management as it relates to the performance measures.

II. GA – Electronic Gateway Availability

A. GA-1 – Gateway Availability – IMA-GUI

1. Introduction and Background

GA-1 is designed to measure the availability of the IMA-GUI gateway and two associated systems. GA-1A measures the availability of IMA-GUI itself, GA-1B measures the availability of Fetch-N-Stuff, and GA-1C measures the availability of Data Arbiter.

There is no product reporting for this measure, and it has no exclusions. The standard for all of the sub-measures is 99.25 percent up-time. Each of the sub-measures has specific scheduled up times. The formula for this measure in the PID is:

([Number of hours and minutes gateway is available to CLECs during reporting period]/[Number of hours and minutes of scheduled availability time during reporting period]) x 100

The PID also defines several terms:

Scheduled availability time is equal to scheduled up time minus scheduled down time.

Scheduled down time is time identified and communicated that the interface is not available due to maintenance and/or upgrade work.

Time gateway is available to CLECs is equal to scheduled availability time minus outage time.

An outage is a critical or serious loss of functionality attributable to the specified gateway or component affecting Qwest's ability to serve its customers.

Problem Management Records *(PMRs)* are the source documents that record application outages. A potential outage can be identified in several different ways. A CLEC can call Qwest and report a problem with an application, in which case Qwest will open a trouble ticket and investigate the problem. Automatic system alerts can also indicate a problem. Finally, Qwest support personnel could notice that an application is down or running slowly. After Qwest investigates the incident, the PMR is filled out, noting whether the problem resulted in a customer-affecting outage, the application that experienced the outage, and the start and stop time of the outage.

A program called the Nightly Availability Rollup Calculation performs several functions on PMRs that are critical to performance measure reporting. It compares PMRs for the same application and ensures that there is no *double-counting* when they cover partially overlapping time periods. It is ensures that the outage interval used in performance reporting only includes the portion of the outage time that occurred during the scheduled up time of the application.

2.   Overall Summary

There have been three observations and one exception issued regarding this measure. Qwest has satisfactorily responded to all of them and the performance measure is ready for release.

3.   Analysis

Liberty conducted several interviews and issued numerous data requests to learn about the performance measure development process. That fact-finding resulted in the observations and exception discussed below. Additional interviews and data requests were issued to ensure that Qwest had resolved them properly.

Liberty also wanted a more precise definition of an outage, and several data requests addressed that issue. Liberty has arrived at several inferences regarding outages from the responses to those data requests. As stated in the PID, an outage is a critical or serious loss of functionality affecting Qwest's ability to serve its customers. Qwest does not use slow response times in determining if an outage has occurred, but it does use timeouts. If an application is inoperable or is incurring more than three timeouts per 5-minute period, then Qwest considers the application unavailable to the customer. Qwest only takes an outage if the problem is not a client problem.

During the PID workshop, reference was made to a gateway system "stoppage" in Arizona that was not considered an outage by Qwest, and Liberty investigated this issue. Qwest responded that the customer had encountered error messages because of an extremely brief backup in transaction processing. Qwest stated that the backup was so brief that the problem was repaired before it could have been identified, and thus no trouble ticket was even created.

Liberty's analysis revealed several problems with this measure (see the discussion of exceptions and observations below). After Qwest's initial process revisions to resolve those problems, Liberty requested all PMRs (regardless of whether they reported an outage) for this measure for the month of October 2000. After reviewing the PMRs, Liberty suspected that the calculated results for October (which used the new process for the first time) were incorrect, and submitted a data request asking Qwest to recheck its calculation. The response stated that Qwest had indeed calculated the October results improperly, that the results had been recalculated, and that the corrected results would appear in subsequent performance measure reports. Liberty reviewed the revised October results in the February 7, 2001, performance measure report and suspected that they were still incorrect. Liberty submitted another data request asking Qwest to recheck its reported results. That same data request also asked Qwest how it planned to ensure accurate results in the future. Qwest's response stated that they had indeed double-counted an outage and that it would be corrected. The response also provided a new reporting method. This method is more in line with the processes and systems Qwest uses for its own internal tracking, and Qwest believes it is therefore less likely to be performed incorrectly. Liberty reviewed the new method and concluded that, when implemented properly, it would provide the correct performance measure results. Liberty also concluded that Qwest's recalculation yielded correct results for October.

The application interdependencies problem described in Exception 1030 will only occur if there is an outage in the IMA database component or the IMA menuing component. There has not been an outage in either of those components since October, so October was the most recent month for which Liberty could test the correctness of Qwest's calculation process as it relates to

component interdependencies. Liberty obtained the relevant PMRs for January 2001. Liberty used those PMRs to recalculate the January 2001 results for this measure and concluded that they were correct.

4. Findings and Conclusions

a. Performance Measure Release Date

Liberty released measure GA-1 on March 16, 2001.

b. Exceptions

There was one exception regarding this performance measure. Exception 1030 found that, because of application interdependencies, Qwest was incorrectly reporting many of the gateway availability results. The main problem related to the fact that outages in the IMA menuing or IMA database components could create an outage in a gateway application just as an outage in the application itself could. Qwest responded with a proposal for a revised set of six gateway availability measures. Liberty met with Qwest to discuss the proposed measures and how results for them would be calculated. Liberty concluded that reporting them properly should resolve the problem. The ROC TAG decided that one of the measures, GA-5 - FOM, was unnecessary. The remaining five measures are the ones to be found in the latest PID. GA-1 now reports outages against the relevant components as shown in the following table:

Measure	Components
GA-1A	IMA-GUI + IMA database (po/o hrs.) + IMA Menuing (po/o hrs.)
GA-1B	Fetch-N-Stuff
GA-1C	Data Arbiter ADR + Data Arbiter CSR + Data Arbiter EQPF1 + Data Arbiter PIC + Data Arbiter TNR

c. Observations

There have been three observations regarding this performance measure. Observation 1006 found that Qwest had been using incorrect scheduled up times for most of the gateway measures. Qwest responded that it had been using a 12-month average availability time and that it would begin using the actual scheduled availability time for each period. Liberty confirmed that Qwest is now using actual scheduled availability times.

Observation 1009 found that some of the gateway availability results in the regional report differed from those in the Colorado report for the same month, even though the results should be the same. During the period of the audit, Qwest has frequently been revising historical performance measure results as it corrects problems. Qwest responded that Liberty had compared a report with revised results with a report that did not have revised results, and Liberty found this answer to be correct.

Liberty's Observation 1015 found that the documentation of the entire gateway performance measure development and reporting process was inadequate. Qwest provided new documentation, which included descriptions of how to determine whether an outage had occurred (with illustrative examples), the steps required to properly code the ticket, and how to calculate the performance measurement results. Liberty reviewed the documents and concluded that they were adequate.

In addition to Observation 1015, a data request asked for all documentation of how Qwest identifies and handles scheduled down-time. In responding to that data request, Qwest discovered that its processes had not been handling scheduled down-time properly and that previous performance measure reports had not been including it. For example, there were actually 840 minutes of scheduled down-time that should have been reported against GA-2 in December, but the February 7, 2001 performance report did not include that scheduled down time. Qwest stated that they have fixed the problem. The performance report for January (dated March 5, 2001) properly includes down-time for all gateway availability measures except GA-4 (which is not the subject of this release).

d.   Conclusions

This performance measure accurately reports percent availability for the relevant applications. Qwest has modified or augmented its procedures and documentation to address the problems discussed above.

5.   Recommendations

The gateway availability performance measure reporting process is newly revised and Qwest has encountered problems in implementing it. Because of this, Liberty recommends that Qwest closely monitor every step in the process and independently recalculate the results obtained. Someone other than the people originally involved in producing the results should do this recalculation. It should include reviewing the source documents for outages and scheduled down-time, recalculating the scheduled up-time, and then independently calculating the numerators and denominators for the sub-measures. Liberty recommends that this recalculation be done for at least the next four to six months.

B.   GA-2 – Gateway Availability – IMA-EDI

1.   Introduction and Background

GA-2 is designed to measure the availability of the IMA-EDI gateway. The scheduled up-time for this measure is 6:00 a.m. to 10:00 p.m. Monday through Friday, and 6:00 a.m. to 8:00 p.m. on Saturday. There is no product reporting for this measure, and it has no exclusions. The standard for it is 99.25 percent up-time.

The formula for this measure in the PID is:

([Number of hours and minutes gateway is available to CLECs during reporting period]/[Number of hours and minutes of scheduled availability time during reporting period]) x 100

The PID also defines several terms:

Scheduled availability time is equal to scheduled up time minus scheduled down time.

Scheduled down time is time identified and communicated that the interface is not available due to maintenance and/or upgrade work.

Time gateway is available to CLECs is equal to scheduled availability time minus outage time.

An outage is a critical or serious loss of functionality attributable to the specified gateway or component affecting Qwest's ability to serve its customers.

Problem Management Records *(PMRs)* are the source documents that record application outages. A potential outage can be identified in several different ways. A CLEC can call Qwest and report a problem with an application, in which case Qwest will open a trouble ticket and investigate the problem. Automatic system alerts can also indicate a problem. Finally, Qwest support personnel could notice that an application is down or running slowly. After Qwest investigates the incident, the PMR is filled out, noting whether the problem resulted in a customer-affecting outage, the application that experienced the outage, and the start and stop time of the outage.

A program called the Nightly Availability Rollup Calculation performs several functions on PMRs that are critical to performance measure reporting. It compares PMRs for the same application and ensures that there is no *double-counting* when they cover partially overlapping time periods. It also ensures that the outage interval used in performance reporting only includes the portion of the outage time that occurred during the scheduled up time of the application.

2. Overall Summary

There have been three observations and one exception issued regarding this measure. Qwest has satisfactorily responded to all of them. The performance measure is ready for release.

3. Analysis

Liberty conducted several interviews and issued numerous data requests to learn about the performance measure development process. That fact-finding resulted in the observations and exception discussed below. Additional interviews and data requests were issued to ensure that Qwest had resolved them properly.

Liberty also wanted a more precise definition of an outage, and several data requests addressed that issue. Liberty has arrived at several inferences regarding outages from the responses to those data requests. As stated in the PID, an outage is a critical or serious loss of functionality affecting Qwest's ability to serve its customers. Qwest does not use slow response times in determining if an outage has occurred, but it does use timeouts. If an application is inoperable or is incurring

more than 3 timeouts per 5-minute period, then Qwest considers the application unavailable to the customer. Qwest only takes an outage if the problem is not a client problem.

During the PID workshop, reference was made to a gateway system "stoppage" in Arizona that was not considered an outage by Qwest, and Liberty investigated this issue. Qwest responded that the customer had encountered error messages because of an extremely brief backup in transaction processing. Qwest stated that the backup was so brief that the problem was repaired before it could have been identified, and thus no trouble ticket was even created.

Liberty's analysis revealed several problems with this measure (see the discussion of exceptions and observations below). After Qwest's initial process revisions to resolve those problems, Liberty requested all PMRs (whether or not they reported an outage) for this measure for the month of October 2000. After reviewing the PMRs, Liberty suspected that the calculated results for October (which used the new process for the first time) were incorrect, and submitted a data request asking Qwest to recheck its calculation. The response stated that Qwest had indeed calculated the October results improperly, that the results had been recalculated, and that the corrected results would appear in subsequent performance measure reports. Liberty reviewed the revised October results in the 2/7/01 performance measure report and suspected that they were still incorrect. Liberty submitted another data request asking Qwest to recheck its reported results. That same data request also asked Qwest how it planned to ensure accurate results in the future. Qwest's response stated that they had indeed double-counted an outage and that it would be corrected. The response also provided a new reporting method. This method is more in line with the processes and systems Qwest uses for its own internal tracking, and Qwest believes it is therefore less likely to be performed incorrectly. Liberty reviewed the new method and concluded that, when implemented properly, it would provide the correct performance measure results. Liberty also concluded that Qwest's recalculation yielded correct results for October.

The application interdependencies problem described in Exception 1030 will only occur if there is an outage in the IMA database component or the IMA menuing component. There has not been an outage in either of those components since October, so October is the most recent month for which Liberty could test the correctness of Qwest's calculation process as it relates to component interdependencies. Liberty did obtain the relevant PMRs for January 2001. Liberty used those PMRs to recalculate the January 2001 results for this measure and concluded that they were correct.

4. Findings and Conclusions

a. Performance Measure Release Date

Liberty considered measure GA-2 to meet the audit-release requirements as of March 16, 2001.

b. Exceptions

There was one exception regarding this performance measure. Exception 1030 found that, because of application interdependencies, Qwest was incorrectly reporting many of the gateway availability results. The main problem related to the fact that outages in the IMA menuing or IMA database components could create an outage in a gateway application just as an outage in the application itself could. Qwest responded with a proposal for a revised set of six gateway availability measures. Liberty met with Qwest to discuss the proposed measures and how results

for them would be calculated. Liberty concluded that reporting them properly should resolve the problem. The ROC TAG decided that one of the measures, GA-5 - FOM, was unnecessary. The remaining five measures are the ones to be found in the latest PID. GA-2 now reports outages against the IMA-EDI and IMA database (during preordering/ordering hours) components.

c. Observations

There have been three observations regarding this performance measure. Observation 1006 found that Qwest had been using incorrect scheduled up times for most of the gateway measures. Qwest responded that it had been using a 12-month average availability time and that it would begin using the actual scheduled availability time for each period. Liberty confirmed that Qwest is now using actual scheduled availability times.

Observation 1009 found that some of the gateway availability results in the regional report differed from those in the Colorado report for the same month, even though the results should be the same. During the period of the audit, Qwest has frequently been revising historical performance measure results as it corrects problems. Qwest responded that Liberty had compared a report with revised results with a report that did not have revised results, and Liberty found this answer to be correct.

Liberty's Observation 1015 found that the documentation of the entire gateway performance measure development and reporting process was inadequate. Qwest provided new documentation, which included descriptions of how to determine whether an outage has occurred (with illustrative examples), the steps required to properly code the ticket, and how to calculate the performance measurement results. Liberty reviewed the documents and concluded that they were adequate.

In addition to Observation 1015, a data request asked for all documentation of how Qwest identifies and handles scheduled down time. In responding to that data request, Qwest discovered that its processes had not been handling scheduled down time properly and that previous performance measure reports had not been including it. For example, there were actually 840 minutes of scheduled down time that should have been reported against GA-2 in December, but the February 7, 2001 performance report did not include that scheduled down time. Qwest stated that they have fixed the problem. The performance report for January (dated March 5, 2001) properly includes downtime for all gateway availability measures except GA-4 (which is not the subject of this PID release).

d. Conclusions

This performance measure accurately reports percent availability for the relevant applications. Qwest has modified or augmented its procedures and documentation to address the problems discussed above.

5. Recommendations

The gateway availability performance measure reporting process is newly revised and Qwest has encountered problems in implementing it. Because of this, Liberty recommends that Qwest closely monitor every step in the process and independently recalculate the results obtained. Someone other than the people originally involved in producing the results should do this

recalculation. It should include reviewing the source documents for outages and scheduled downtime, recalculating the scheduled up time, and then independently calculating the numerators and denominators for the sub-measures. Liberty recommends that this recalculation be done for at least the next four to six months.

C. GA-3 – Gateway Availability – EB-TA

1. Introduction and Background

GA-3 is designed to measure the availability of the EB-TA interface. The scheduled up times for the interface are 24 hours-a-day, Monday through Friday, midnight to 11:00 p.m. on Saturday, and 5:00 a.m. to midnight on Sunday.

There is no product reporting for this measure, and it has no exclusions. The standard for GA-3 is 99.25 percent up-time. The formula for this measure in the PID is:

([Number of hours and minutes gateway is available to CLECs during reporting period]/[Number of hours and minutes of scheduled availability time during reporting period]) x 100

The PID also defines several terms:

Scheduled availability time is equal to scheduled up time minus scheduled down time.

Scheduled down time is time identified and communicated that the interface is not available due to maintenance and/or upgrade work.

Time gateway is available to CLECs is equal to scheduled availability time minus outage time.

An outage is a critical or serious loss of functionality attributable to the specified gateway or component affecting Qwest's ability to serve its customers.

Problem Management Records *(PMRs)* are the source documents that record application outages. A potential outage can be identified in several different ways. A CLEC can call Qwest and report a problem with an application, in which case Qwest will open a trouble ticket and investigate the problem. Automatic system alerts can also indicate a problem. Finally, Qwest support personnel could notice that an application is down or running slowly. After Qwest investigates the incident, the PMR is filled out, noting whether the problem resulted in a customer-affecting outage, the application that experienced the outage, and the start and stop time of the outage.

A program called the Nightly Availability Rollup Calculation performs several functions on PMRs that are critical to performance measure reporting. It compares PMRs for the same application and ensures that there is no *double-counting* when they cover partially overlapping time periods. It also ensures that the outage interval used in performance reporting only includes the portion of the outage time that occurred during the scheduled up time of the application.

2.   Overall Summary

There have been three observations and one exception issued regarding this measure. Qwest has satisfactorily responded to all of them. The performance measure is ready for release.

3.   Analysis

Liberty conducted several interviews and issued numerous data requests to learn about the performance measure development process. That fact-finding resulted in the observations and exception discussed below. Additional interviews and data requests were issued to ensure that Qwest had resolved them properly.

Liberty also wanted a more precise definition of an outage, and several data requests addressed that issue. Liberty has arrived at several inferences regarding outages from the responses to those data requests. As stated in the PID, an outage is a critical or serious loss of functionality affecting Qwest's ability to serve its customers. Qwest does not use slow response times in determining if an outage has occurred, but it does use timeouts. If an application is inoperable or is incurring more than 3 timeouts per 5-minute period, then Qwest considers the application unavailable to the customer. Qwest only takes an outage if the problem is not a client problem.

During the PID workshop, reference was made to a gateway system "stoppage" in Arizona that was not considered an outage by Qwest, and Liberty investigated this issue. Qwest responded that the customer had encountered error messages because of an extremely brief backup in transaction processing. Qwest stated that the backup was so brief that the problem was repaired before it could have been identified, and thus no trouble ticket was even created.

Liberty's analysis revealed several problems with this measure (see the discussion of exceptions and observations below). After Qwest's initial process revisions to resolve those problems, Liberty requested all PMRs (whether or not they reported an outage) for this measure for the month of October 2000. After reviewing the PMRs, Liberty suspected that the calculated results for October (which used the new process for the first time) were incorrect, and submitted a data request asking Qwest to recheck its calculation. The response stated that Qwest had indeed calculated the October results improperly, that the results had been recalculated, and that the corrected results would appear in subsequent performance measure reports. Liberty reviewed the revised October results in the February 7, 2001, performance measure report and suspected that they were still incorrect. Liberty submitted another data request asking Qwest to recheck its reported results. That same data request also asked Qwest how it planned to ensure accurate results in the future. Qwest's response stated that they had indeed double-counted an outage and that it would be corrected. The response also provided a new reporting method. This method is more in line with the processes and systems Qwest uses for its own internal tracking, and Qwest believes it is therefore less likely to be performed incorrectly. Liberty reviewed the new method and concluded that, when implemented properly, it would provide the correct performance measure results. Liberty also concluded that Qwest's recalculation yielded correct results for October.

The application interdependencies problem described in Exception 1030 will only occur if there is an outage in the IMA database component or the IMA menuing component. These components are not relevant to the GA-3 measure. There has not been an outage in either of those components since October, so October is the most recent month for which Liberty could

test the correctness of Qwest's calculation process as it relates to component interdependencies. Liberty did obtain the relevant PMRs for January 2001. Liberty used those PMRs to recalculate the January 2001 results for this measure and concluded that they were correct.

4.   Findings and Conclusions

a.   Performance Measure Release Date

Liberty considered measure GA-3 to meet the audit-release requirements as of March 16, 2001.

b.   Exceptions

There was one exception regarding this performance measure. Exception 1030 found that, because of application interdependencies, Qwest was incorrectly reporting many of the gateway availability results. The main problem related to the fact that outages in the IMA menuing or IMA database components could create an outage in a gateway application just as an outage in the application itself could. Qwest responded with a proposal for a revised set of six gateway availability measures. Liberty met with Qwest to discuss the proposed measures and how results for them would be calculated. Liberty concluded that reporting them properly should resolve the problem. The ROC TAG decided that one of the measures, GA-5 - FOM, was unnecessary. The remaining five measures are the ones to be found in the PID. GA-3 reports outages against the MEDIACC component.

c.   Observations

There have been three observations regarding this performance measure. Observation 1006 found that Qwest had been using incorrect scheduled up times for most of the gateway measures. Qwest responded that it had been using a 12-month average availability time and that it would begin using the actual scheduled availability time for each period. Liberty confirmed that Qwest is now using actual scheduled availability times.

Observation 1009 found that some of the gateway availability results in the regional report differed from those in the Colorado report for the same month, even though the results should be the same. During the period of the audit, Qwest has frequently been revising historical performance measure results as it corrects problems. Qwest responded that Liberty had compared a report with revised results with a report that did not have revised results, and Liberty found this answer to be correct.

Liberty's Observation 1015 found that the documentation of the entire gateway performance measure development and reporting process was inadequate. Qwest provided new documentation, which included descriptions of how to determine whether an outage has occurred (with illustrative examples), the steps required to properly code the ticket, and how to calculate the performance measurement results. Liberty reviewed the documents and concluded that they were adequate.

In addition to Observation 1015, a data request asked for all documentation of how Qwest identifies and handles scheduled down time. In responding to that data request, Qwest discovered that its processes had not been handling scheduled down time properly and that previous performance measure reports had not been including it. For example, there were actually 840

minutes of scheduled down time that should have been reported against GA-2 in December, but the February 7, 2001 performance report did not include that scheduled down time. Qwest stated that they have fixed the problem. The performance report for January (dated March 5, 2001) properly includes downtime for all gateway availability measures except GA-4 (which is not the subject of this PID release).

d.   Conclusions

This performance measure accurately reports percent availability for the relevant applications. Qwest has modified or augmented its procedures and documentation to address the problems discussed above.

5.   Recommendations

The gateway availability performance measure reporting process is newly revised and Qwest has encountered problems in implementing it. Because of this, Liberty recommends that Qwest closely monitor every step in the process and independently recalculate the results obtained. Someone other than the people originally involved in producing the results should do this recalculation. It should include reviewing the source documents for outages and scheduled downtime, recalculating the scheduled up time, and then independently calculating the numerators and denominators for the sub-measures. Liberty recommends that this recalculation be done for at least the next four to six months.

D.   GA-4– Gateway Availability – EXACT

1.   Introduction and Background

GA-4 is designed to measure the availability of the EXACT electronic access service request system to CLECs. The scheduled up times are 6 a.m. to 9 p.m. Monday through Friday, and 7 a.m. to 5 p.m. on Saturday. There is no product reporting for this measure, and it has no exclusions. The standard for this measure is 99.25 percent up time. The formula for this measure in the PID is:

([Number of hours and minutes EXACT is available to CLECs during reporting period]/[Number of hours and minutes of scheduled availability time during reporting period]) x 100

The PID also defines several terms:

Scheduled availability time is equal to scheduled up time minus scheduled down time.

Scheduled down time is time identified and communicated that the interface is not available due to maintenance and/or upgrade work.

Time gateway is available to CLECs is equal to scheduled availability time minus outage time.

*An outage is a critical or serious loss of functionality attributable to the specified
gateway or component affecting Qwest's ability to serve its customers.*

Problem Management Records *(PMRs)* are the source documents that record application outages. A potential outage can be identified in several different ways. A CLEC can call Qwest and report a problem with an application, in which case Qwest will open a trouble ticket and investigate the problem. Automatic system alerts can also indicate a problem. Finally, Qwest support personnel could notice that an application is down or running slowly. After Qwest investigates the incident, the PMR is filled out, noting whether the problem resulted in a customer-affecting outage, the application that experienced the outage, and the start and stop time of the outage.

A program called the Nightly Availability Rollup Calculation performs several functions on PMRs that are critical to performance measure reporting. It compares PMRs for the same application and ensures that there is no *double-counting* when they cover partially overlapping time periods. It also ensures that the outage interval used in performance reporting only includes the portion of the outage time that occurred during the scheduled up time of the application.

2. Overall Summary

There have been three observations and no exceptions issued regarding this measure. Qwest has satisfactorily responded to all of them. The performance measure is ready for release.

3. Analysis

Liberty conducted several interviews and issued numerous data requests to learn about the performance measure .development process. That fact-finding resulted in the observations discussed below. Additional interviews and data requests were issued to ensure that Qwest had resolved them properly.

Liberty also wanted a more precise definition of an outage, and several data requests addressed that issue. Liberty has arrived at several inferences regarding outages from the responses to those data requests. As stated in the PID, an outage is a critical or serious loss of functionality affecting Qwest's ability to serve its customers. Qwest does not use slow response times *per se* in determining if an outage has occurred, but it does use timeouts. If an application is inoperable or is incurring more than 3 timeouts per 5-minute period, then Qwest considers the application unavailable to the customer. Qwest only takes an outage if the problem is not a client problem.

During a PID workshop, reference was made to a gateway system "stoppage" in Arizona that was not considered an outage by Qwest, and Liberty investigated this issue. Qwest responded that the customer had encountered error messages because of an extremely brief backup in transaction processing. Qwest stated that the backup was so brief that the problem was repaired before it could have been identified, and thus no trouble ticket was even created.

Liberty's analysis revealed several problems with this measure (see the discussion of observations below). After Qwest's initial process revisions to resolve those problems, Liberty requested all PMRs (regardless of whether they reported an outage) for all of the gateway measures for the month of October 2000. After reviewing the PMRs, Liberty suspected that the calculated results for October (which used the new process for the first time) were incorrect, and submitted a data request asking Qwest to recheck its calculation. The response stated that Qwest

had indeed calculated the October results improperly, that the results had been recalculated, and that the corrected results would appear in subsequent performance measure reports. Liberty reviewed the revised October results in the 2/7/01 performance measure report and suspected that they were still incorrect. Liberty submitted another data request asking Qwest to recheck its reported results. That same data request also asked Qwest how it planned to ensure accurate results in the future. Qwest's response stated that they had indeed double-counted an outage and that it would be corrected. The response also provided a new reporting method. This method is more in line with the processes and systems Qwest uses for its own internal tracking, and Qwest believes it is therefore less likely to be performed incorrectly. Liberty reviewed the new method and concluded that, when implemented properly, it would provide the correct performance measure results. Liberty also concluded that Qwest's recalculation yielded correct results for October.

Liberty obtained the relevant PMRs for the EXACT application for the month of February 2001. There were three PMRs, one of which had resulted in an outage of 8 minutes. Liberty used those PMRs to recalculate the reported February results for GA-4 and concluded that they were correct.

4. Findings and Conclusions

a. Performance Measure Release Date

Liberty considered measure GA-4 to meet the audit-release requirements as of May 1, 2001.

b. Exceptions

There were no exceptions regarding the GA-4 gateway availability performance measure.

c. Observations

There have been three observations regarding this performance measure. Observation 1006 found that Qwest had been using incorrect scheduled up times for most of the gateway measures, including GA-4. Qwest responded that it had been using a 12-month average availability time and that it would begin using the actual scheduled availability time for each period. Liberty confirmed that Qwest is now using actual scheduled availability times.

Observation 1009 found that some of the gateway availability results in the regional report differed from those in the Colorado report for the same month, even though the results should be the same. During the period of the audit, Qwest has frequently been revising historical performance measure results as it corrects problems. Qwest responded that Liberty had compared a report with revised results with a report that did not have revised results, and Liberty found this answer to be correct.

Liberty's Observation 1015 found that the documentation of the entire gateway performance measure development and reporting process was inadequate. Qwest provided new documentation, which included descriptions of how to determine whether an outage has occurred (with illustrative examples), the steps required to properly code the ticket, and how to calculate the performance measurement results. Liberty reviewed the documents and concluded that they were adequate.

In addition to Observation 1015, a data request asked for all documentation of how Qwest identifies and handles scheduled down time. In responding to that data request, Qwest discovered that its processes had not been handling scheduled down time properly and that previous performance measure reports had not been including it. For example, there were actually 840 minutes of scheduled down time that should have been reported against GA-2 in December, but the February 7, 2001 performance report did not include that scheduled down time. To address that problem, Qwest instituted revised procedures, including a monthly meeting to check the results being reported for the Gateway Availability measures. This meeting includes a review of the IRs used to track scheduled down time. Qwest reported no IRs against the EXACT application for the month of February 2001 and, accordingly, the April 6, 2001 performance report properly includes scheduled down time for GA-4 for that month.

d. Conclusions

This performance measure accurately reports percent availability for the EXACT system. Qwest has modified or augmented its procedures and documentation to address the problems discussed above.

5. Recommendations

The gateway availability performance measure reporting process is newly revised and Qwest has encountered problems in implementing it. Because of this, Liberty recommends that Qwest closely monitor every step in the process and independently recalculate the results obtained. Someone other than the people originally involved in producing the results should do this recalculation. It should include reviewing the source documents for outages and scheduled downtime, recalculating the scheduled up time, and then independently calculating the numerators and denominators for the sub-measures. Liberty recommends that this recalculation be done for at least the next four to six months.

E. GA-6 – Gateway Availability – GUI - Repair

1. Introduction and Background

GA-6 is designed to measure the availability of the GUI Repair gateway. The scheduled up-time for the gateway is 2:15 a.m. to 11:15 p.m. Monday through Friday, 2:15 a.m. to 10:00 p.m. on Saturday, and 7:00 a.m. to 11:15 p.m. on Sunday.

There is no product reporting for this measure, and it has no exclusions. The standard for this measure is 99.25 percent up-time. The formula for this measure in the PID is:

([Number of hours and minutes gateway is available to CLECs during reporting period]/[Number of hours and minutes of scheduled availability time during reporting period]) x 100

The PID also defines several terms:

Scheduled availability time is equal to scheduled up time minus scheduled down time.

Scheduled down time is time identified and communicated that the interface is not available due to maintenance and/or upgrade work.

Time gateway is available to CLECs is equal to scheduled availability time minus outage time.

An outage is a critical or serious loss of functionality attributable to the specified gateway or component affecting Qwest's ability to serve its customers.

Problem Management Records *(PMRs)* are the source documents that record application outages. A potential outage can be identified in several different ways. A CLEC can call Qwest and report a problem with an application, in which case Qwest will open a trouble ticket and investigate the problem. Automatic system alerts can also indicate a problem. Finally, Qwest support personnel could notice that an application is down or running slowly. After Qwest investigates the incident, the PMR is filled out, noting whether the problem resulted in a customer-affecting outage, the application that experienced the outage, and the start and stop time of the outage.

A program called the Nightly Availability Rollup Calculation performs several functions on PMRs that are critical to performance measure reporting. It compares PMRs for the same application and ensures that there is no *double-counting* when they cover partially overlapping time periods. It also ensures that the outage interval used in performance reporting only includes the portion of the outage time that occurred during the scheduled up time of the application.

2.   Overall Summary

There have been three observations and one exception issued regarding this measure. Qwest has satisfactorily responded to all of them. The performance measure is ready for release.

3.   Analysis

Liberty conducted several interviews and issued numerous data requests to learn about the performance measure development process. That fact-finding resulted in the observations and exception discussed below. Additional interviews and data requests were issued to ensure that Qwest had resolved them properly.

Liberty also wanted a more precise definition of an outage, and several data requests addressed that issue. Liberty has arrived at several inferences regarding outages from the responses to those data requests. As stated in the PID, an outage is a critical or serious loss of functionality affecting Qwest's ability to serve its customers. Qwest does not use slow response times *per se* in determining if an outage has occurred, but it does use timeouts. If an application is inoperable or is incurring more than 3 timeouts per 5-minute period, then Qwest considers the application unavailable to the customer. Qwest only takes an outage if the problem is not a client problem.

During the PID workshop, reference was made to a gateway system "stoppage" in Arizona that was not considered an outage by Qwest, and Liberty investigated this issue. Qwest responded that the customer had encountered error messages because of an extremely brief backup in

transaction processing. Qwest stated that the backup was so brief that the problem was repaired before it could have been identified, and thus no trouble ticket was even created.

Liberty's analysis revealed several problems with this measure (see the discussion of exceptions and observations below). After Qwest's initial process revisions to resolve those problems, Liberty requested all PMRs (whether or not they reported an outage) for this measure for the month of October 2000. After reviewing the PMRs, Liberty suspected that the calculated results for October (which used the new process for the first time) were incorrect, and submitted a data request asking Qwest to recheck its calculation. The response stated that Qwest had indeed calculated the October results improperly, that the results had been recalculated, and that the corrected results would appear in subsequent performance measure reports. Liberty reviewed the revised October results in the February 7, 2001, performance measure report and suspected that they were still incorrect. Liberty submitted another data request asking Qwest to recheck its reported results. That same data request also asked Qwest how it planned to ensure accurate results in the future. Qwest's response stated that they had indeed double-counted an outage and that it would be corrected. The response also provided a new reporting method. This method is more in line with the processes and systems Qwest uses for its own internal tracking, and Qwest believes it is therefore less likely to be performed incorrectly. Liberty reviewed the new method and concluded that, when implemented properly, it would provide the correct performance measure results. Liberty also concluded that Qwest's recalculation yielded correct results for October.

The application interdependencies problem described in Exception 1030 will only occur if there is an outage in the IMA database component or the IMA menuing component. There has not been an outage in either of those components since October, so October is the most recent month for which Liberty could test the correctness of Qwest's calculation process as it relates to component interdependencies. Liberty did obtain the relevant PMRs for January 2001. Liberty used those PMRs to recalculate the January 2001 results for this measure and concluded that they were correct.

4. Findings and Conclusions

a. Performance Measure Release Date

Liberty considered measure GA-6 to meet the audit-release requirements as of March 16, 2001.

b. Exceptions

There was one exception regarding this performance measure. Exception 1030 found that, because of application interdependencies, Qwest was incorrectly reporting many of the gateway availability results. The main problem related to the fact that outages in the IMA menuing or IMA database components could create an outage in a gateway application just as an outage in the application itself could. Qwest responded with a proposal for a revised set of six gateway availability measures. Liberty met with Qwest to discuss the proposed measures and how results for them would be calculated. Liberty concluded that reporting them properly should resolve the problem. The ROC TAG decided that one of the measures, GA-5 - FOM, was unnecessary. The remaining five measures are the ones to be found in the PID starting with version 2.2. GA-6 now reports outages against the IMA Repair, IMA database (during repair hours) and IMA Menuing (during repair hours) components.

c.   Observations

There have been three observations regarding this performance measure. Observation 1006 found that Qwest had been using incorrect scheduled up times for most of the gateway measures. Qwest responded that it had been using a 12-month average availability time and that it would begin using the actual scheduled availability time for each period. Liberty confirmed that Qwest is now using actual scheduled availability times.

Observation 1009 found that some of the gateway availability results in the regional report differed from those in the Colorado report for the same month, even though the results should be the same. During the period of the audit, Qwest has frequently been revising historical performance measure results as it corrects problems. Qwest responded that Liberty had compared a report with revised results with a report that did not have revised results, and Liberty found this answer to be correct.

Liberty's Observation 1015 found that the documentation of the entire gateway performance measure development and reporting process was inadequate. Qwest provided new documentation, which included descriptions of how to determine whether an outage has occurred (with illustrative examples), the steps required to properly code the ticket, and how to calculate the performance measurement results. Liberty reviewed the documents and concluded that they were adequate.

In addition to Observation 1015, a data request asked for all documentation of how Qwest identifies and handles scheduled down-time. In responding to that data request, Qwest discovered that its processes had not been handling scheduled down-time properly and that previous performance measure reports had not been including it. For example, there were actually 840 minutes of scheduled down-time that should have been reported against GA-2 in December, but the February 7, 2001 performance report did not include that scheduled down-time. Qwest stated that they have fixed the problem. The performance report for January (dated March 5, 2001) properly includes down-time for all gateway availability measures except GA-4 (which is not the subject of this PID release).

d.   Conclusions

This performance measure accurately reports percent availability for the relevant applications. Qwest has modified or augmented its procedures and documentation to address the problems discussed above.

5.   Recommendations

The gateway availability performance measure reporting process is newly revised and Qwest has encountered problems in implementing it. Because of this, Liberty recommends that Qwest closely monitor every step in the process and independently recalculate the results obtained. Someone other than the people originally involved in producing the results should do this recalculation. It should include reviewing the source documents for outages and scheduled down-time, recalculating the scheduled up time, and then independently calculating the numerators and denominators for the sub-measures. Liberty recommends that this recalculation be done for at least the next four to six months.